Topic: CONSERVATION OF PLANTS AND ANIMALS

Conservation:- It is defined as the management of the human use of the biosphere so that it may yield the greatest benefits to the present generation while maintaining its potential to meet the needs for the future generation. It is the wise and judicious use of resources.

Aims of Conservation:-

i) To preserve the quality of environment i.e. maintain a pollution free environment.

ii) Ensuring the continuous yield of useful materials, living or non-living, by establishing a balanced cycle of harvest and renewal.

Biosphere:- It is that part of the earth in which living organisms exist or which supports life.

Wildlife:- It means all the animals and plants which are found naturally in the forests and other natural habitats.

Biodiversity:- It refers to the variety of organisms found in a particular area, it denotes the richness of species in a particular habitat.

Ecosystem:- It includes all the living organisms of an area and the physical environment in which they live. In an ecosystem various living organisms interact among themselves through food chains and also with the physical environment in which they live.

WildAnimals:- The animals living in the natural environment like forest are called wild animals. These are not domesticated by man.

Wildplants:- The plants growing in natural environment on their own are called wild plants. These are not cultivated by man.

Greenhouseeffect:-The trapping of heat rays by carbon dioxide resulting in warming up of the earth's atmosphere is called Green house effect.

Globalwarming: The gradual increase in the overall temperature of earth's atmosphere due to green house effect caused by the increased level of CO_2in the atmosphere is called global warming. . :

Desertification:-Gradual conversion of a fertile land into a desert is called desertification.

Flora:- The plants that grow naturally in a particular area are called flora of the area e.g. teak, fern mango are the flora of Pachmarhi Biosphere Reserve.

Fauna: The animals which live naturally in a particular area are called fauna of that area e.g. wolf, leopard, wild dog are the fauna of Pachmarhi Biosphere Reserve.

Fertile Offspring:- A fertile offspring is a baby animal or a baby plant which can reproduce its own kind of organisms in due course of time.

Species:- A species is a group of same kind of organisms which can interbreed to produce fertile offspring. All the members of a species have common features. Some of the examples of species are Human, cat mango, paddy etc. There are about six lakh species of animals and four lakh species of plants in the world today.

EndemicSpecies:-These are those species of plants and animals which are found exclusively in a particular area. These are restricted to a certain area and are not found naturally anywhere else in other areas. For example sal and wild mango are the endemic flora of the PachmarhiBioshere Reserve. Indian giant squirrel, flying squirrel and bison are the endemic fauna of the Pachmarhi Biosphere Reserve.

Factors endangering the existence of endemic species:-

i) Destruction of forests

ii) Introduction of new species.

iii. Increasing human population.

*ExtinctSpecies***:-**

The species which no longer exist anywhere on the earth are called extinct species. These have died out completely. A species becomes extinct when the last living member of that species dies e.g. Dinosaur, Dodo, cave lion, Caspian tiger and Irish deer are all extinct and have vanished from the earth.

*EndangeredSpecies***:-**The species which are facing the risk of extinction are calledendangered species. These are on the verge of vanishing from the earth. These exist in small number on the earth, and if we do not take quick action to save them, they may become extinct. The small animals are much more in danger of becoming extinct than the bigger animals. Some examples of endangered animal species are Tiger, Snow Leopard, Asiatic lion, Kashmir stag (Hangul), Desert cat etc.

Extinct in wild:- The species of which captive individuals survive but there is no free living natural population comes under this category e.g. Black Soft-Shell Turtle, Hawaiian Crow etc.

Critically endangered:-The species which faces a very high risk of extinction in the wild is known as critically endangered species e.g. Ivory Billed wood-pecker, Mountain Gorilia, the Little Dodo Bird etc.

Vulnerable Species:- These are the species which are likely to move to endangered category in near future if causative factors continue to operate e.g. Asian Black Bear, Indian Rhinoceros, African Elephant etc.

Rare Species:- These exist in small number and are localized in certain geographical area and may enter into vulnerable category e.g. red wolf, Golden Tabby Tiger, Wild Buffalo etc.

Biodiversity Hot Spots:-These are the earth's richest and most diverse areas in terms of their flora and fauna. India contains about 25-Hot spots and some of them are:-

i) Silent valley (Kerala)
ii) Himalayas (India/Nepal)
iii) Gir forest (Gujarat)

Chipko Movement:-The movement was born in a small hilly village of the upper reaches of Himalayas. The illiterate tribal women commenced this unique movement in December 1972 that became famous as the Chipko (means to embrace) movement. The movement commenced in the Tehri-Garhwal district of U.P. that actually gathered momentum in 1978 when the women faced police firing. It looked as if the movement aimed at saving trees on the Himalayan slopes from the axes of greedy contractors, but its objectives were broad-based. However, chipko reached to Karnataka as "Appiko".

Deforestation:-Itis the process of clearing of forests by cutting down forest trees over a wide area. Trees in the forest are cut for some of the below mentioned purposes:-

i) Procuring land for cultivation.
ii) Building houses and factories.
iii) Making furniture.
iv) Using wood as fuel.
v) Developing industries.

Causes of Deforestation

The main causes of deforestation can be grouped into following two types:

1) Man-made causes 2) Natural causes

Man-madecauses of deforestation include all such ways by which man cuts the trees on alarge scale so as to fulfil1 his various needs.

Natural causes involve the destruction of forests by natural processes like forest fires and severe droughts.

Effects/Consequences of deforestation:

Deforestation is the biggest threat to the existence and survival of living organisms in the following ways:-

1) It snatches away the natural habitat of many animals, plants and birds. It puts many species in endangered zone and many get extinct.
2) Increased temperature on earth would disturb the water cycle and may reduce rain fall causing droughts.
3) As Pollution level increases level of carbon-dioxide in the atmosphere would go up. This would lead to global warming.
4) In the absence of forest cover, the summer becomes hotter while winters become severely cool.
5) Removal of plant cover in the plains makes the area dry. The soil becomes loose leading to desertification. .
6) Removal of plant cover exposes the fertile soil to wind and water leading to soil erosion. .Groundwater level would go down.
7) A number of useful products obtained from trees are also lost. The other properties of the soil like texture, nutrient content etc. also change.

Conservation of Forests and Wildlife (Biodiversity):

Forests and wildlife need to be conserved to preserve biodiversity, to prevent endangered species from becoming extinct and to maintain ecological balance in nature and this can be achieved in the following ways:

1) Deforestation should be avoided.
2) Afforestation should be undertaken.
3) Hunting of animals which is banned should be strictly enforced.
4) Illegal trade in animal skin and elephant tusks should be checked.
5) Alternate sources of energy should be encouraged.
6) Protected areas should be established.
7) Effective system to prevent and fight forest fires should be established.

8) Regular surveys to monitor the population of all the species in forests should be conducted.
9) Laws to conserve biodiversity should be enacted and strictly enforced.
10) Environmental awareness programmes should be conducted on a large scale.
11) NGOs should be provided encouragement to undertake conservation work.

Reasons for Conservation of Wildlife:

1. Ecological diversity
2. Aesthetic value of wildlife.
3. To maintain environmental quality.
4. To preserve genetic pool.
5. To earn money.
6. For breeding programmes.
7. Essential for forest ecosystem.
8. To maintain balance in nature.
9. To maintain greenery of nature.

Protected Areas

There are three types of protected areas which have been established by the Government for the conservation of forests and wild animals. These are:

1) Biosphere Reserves
2) Wildlife Sanctuaries
3) National Parks

1) *Biosphere reserve*:- It is a large protected area of land meant for the conservation of wildlife, biodiversity and the traditional lifestyle of the tribal people living in the area. A Biosphere Reserve is divided into three zones:

i) Core zone ii) Buffer zone iii) Transition zone

Core zone:- The innermost zone of Biosphere Reserve is known as core zone. No human activity is allowed in this zone and it is meant for strict protection of wildlife.

Buffer zone:- The middle zone of a Biosphere Reserve is called buffer zone. It surrounds the core zone. In this zone only limited human activity is allowed e.g. research, environmental education and tourism.

Transition zone:- The outermost zone of a Biosphere Reserve is called transition zone. In this zone several non-destructive human activities are allowed such as houses of tribals, cultivation of crops.

A Biosphere Reserve may also contain other protected areas in it e.g. Wildlife sanctuaries or National Park. No commercial exploitation of natural resources is allowed in a Biosphere Reserve.

Different Biosphere Reserves in India:-

There are fourteen Biosphere Reserves in India and some of them are:-

1)Great Nicobar Biosphere Reserve (Andaman and Nicobar)

2)Kaziranga Biosphere Reserve (Assam)

3)Sunderbans Biosphere Reserve (West Bengal)

4)Kanha Biosphere Reserve (Madhya Pradesh)

5)Pachmarhi Biosphere Reserve (Madhya Pradesh)

Pachmarhi Biosphere Reserve contains other protected areas in it. It contains two Wildlife sanctuaries and one National Park. The two Wildlife Sanctuaries are Bori Sanctuary and Pachmarhi Sanctuary and the National park is Satpura National Park.

Functions Of Biosphere Reserve:

1. It helps in the conservation of wildlife of the area.
2. It helps to maintain the bio-diversity of the area.
3. It preserves the ecosystems in the area.
4. It promotes the economic development of the area which is compatible with conservation objectives.
5. It helps to maintain the lifestyle and culture of the tribal people living in the area. It prevents the commercial exploitation of the area.
6. It provides opportunities for scientific research, environmental education and tourism.

Wildlife Sanctuary :-It is a protected area of land which is created for the protection of wild animals in their natural environment. It provides protection and suitable living conditions to the wild animals in their natural habitat. Killing and capturing of wild animals is strictly prohibited. India has more than 500 wildlife sanctuaries. The names of some of these are:-

1. Sanjay Gandhi Wildlife Sanctuary (Maharashtra).
2. Mudumalai Wildlife Sanctuary (Tamil Nadu)

3. Bharatpur Bird Sancturay (Rajasthan)
4. Dandeli Wildlife Sanctuary (Karnataka)
5. Overa Wildlife Sanctuary (J&K)

Zoo: It is the short form of Zoological garden or 'Zoological Park'. A large garden or park where many types of wild animals and birds brought from different parts of the country and the world are kept in cages or enclosures, so that people can see them, is called a zoo.

National Park:-Itis a relatively large area of scenic beauty protected and maintained by the government to preserve flora and fauna, landscape, historic objects of the area and places of scientific interest. It also provides human recreation and enjoyment. It is large and diverse enough to protect whole sets of ecosystems. The exploitation of natural resources is strictly prohibited.

India has more than 80 National parks. Many of these were initially wildlife Sanctuaries. Some if the prominent National parks of India are:-

- Corbett National Park (Uttarakhand)
- Kanha National Park (Madhya Pradesh)
- Gir National Park (Gujarat)
- Kaziranga National Park (Assam)
- Dachigam National Park (Jammu and Kashmir)

Project Tiger:- It is a wildlife conservation project which was launched by the Government of India on 1st April 1973 to protect the tigers in the country. The objective of this project was to ensure the survival and maintenance of the tiger population in specially constituted Tiger Reserves throughout India. There are 28 Tiger Reserves in India at present which are governed by Project Tiger. One such Tiger Reserve is the Satpur Tiger Reserve of Satpura National park, following are its various objectives:-

1. To maintain a viable population of tigers for scientific, cultural and ecological values.
2. To preserve areas rich in biodiversity as a national heritage for the education and enjoyment.
3. To promote elimination of all forms of human exploitation and disturbance from the core zones.

Differentiate between:

Biosphere Reserve	**Wildlife Sanctuary**
It is spread over a very large area of land.	It occupies a comparatively smaller area of land.
Local people form an integral part of it.	Local people do not form an integral part of it.
Human activities are allowed in its outermost zone.	Human activities are not allowed.

Wildlife Sanctuary	**Zoo**
Here wild animals and birds live in their natural habitat in the forest.	In a zoo, wild animals live in settings such as cages and enclosures.
It is not open to public freely.	It is open to public for a fixed time every day.
Wild animals and birds are very comfortable in this natural environment.	Wild animals and birds are not comfortable in this artificial-environment.

Wildlife Sanctuary	**National park**
It protects and preserves the wild animals in their natural environment.	It protects and preserves wild animals and in their natural environment as well as the scenic beauty, historical objects and habitats of scientific interest in the area.
It is dedicated to the protection of wild animals only.	In addition to protection, wild animals are kept for recreation, enjoyment and educative interests.
It usually does not allow easy access to the visitors.	It allows easy access for the visitors to the land and wildlife inside.

Recycling of Paper

Paper is made from wood pulp that is produced from the wood of forest trees. Paper making is as such a cause of deforestation as many trees have to be cut down from the forests to make paper. We should save paper to save the forest trees. The term recycling of paper means to process waste paper so that it can be used again. Paper can be recycled five to seven times for use. We should 'save paper', 'reuse paper' and 'recycle paper' and it can help us:

1. To save forest trees from being cut down
2. To save water used in paper making.
3. To save energy (electricity) used in making paper.
4. To reduce the amount of harmful chemicals used in paper making.

Red Data Book:-It is a publication which keeps record of all the endangered animal, plants and other species. It contains a list of species which are in danger of becoming extinct. There are different Red Data Books for plants, animals and other species The advantage of maintaining Data Book is that we come to know which species of animals and plants are very small in number and facing the danger of extinction so that timely remedial steps can be taken by the

Authorities concerned to prevent their extinction. It is maintained by IUCN (International Union for the Conservation of Nature and Natural Resources) widely known as World Conservation Union (WCU). The first Red Data Book Was compiled in 1991 and it is revised periodically.

Migration:-The moving of a bird or other animal from one place to another according to the season is called migration. It is the movement from one place to another in one season and return in different season. It can be regarded as an adaptation to escape the harsh and cold conditions ofnormal habitat in winter so as to survive. The birds which cover long distances to reach to other land are known as the migratory birds. The purpose of migration is:-

1. To escape bad weather conditions.
2. To find plenty of food and shelter.
3. To lay eggs (breeding).

India is one of the destinations of many of the migratory birds coming from the very cold regions of the earth. E.g. Siberian Crane which comes from Siberia and visits many areas in India such as Bharatpur in Rajasthan, Sultanpur in Haryana, some wet lands of North east. It stays here for a few months and then flies back to Siberia when the climate becomesfavourable.

Reforestation:-

The term 'reforestation' means to cover again with forest by planting new trees. It can be defined as a process of planting of trees in an area in which forests were destroyed. Forests are called green wealth of a country. If we have to retain our 'green wealth' for future generations, then planting of more trees (reforestation) is the only option. Reforestation can also take place naturally. If the deforested area is left undisturbed for some time, it re-establishes itself by the natural growth of trees. This is called natural reforestation. There is no role of human beings in natural reforestation.

Advantages of Reforestation

1. It produces a large quantity of raw materials for industry, timber trade etc.
2. It will lead to a decrease in global warming by reducing the amount of carbon dioxide gas in the atmosphere.

3. It increases rainfall in an area thereby raising ground water level and preventing droughts.
4. It prevents soil erosion and floods.
5. It increases the area of earth under forests which is good for the conservation of wildlife.

Forest Conservation Act

It is aimed at the preservation and conservation of natural forests and meeting the basic needs of the people living in or near the forests.This act was launched by the Government of India and forest department for the following purposes:-

1. To conserve forests as a natural heritage.
2. To control the movement of the forest products.
3. To control and regulate cattle grazing in the forests.
4. To create and manage reserved, protected and village forests.

Note: Satpura National Park is the first Reserve Forest of India.

Textbook exercises

1) Fill in the blanks

Do it yourself

2) Differentiate between the following:

a) Wildlife Sanctuary and Biosphere reserve: Refer to above Notes

b) Zoo and Wildlife Sanctuary: Refer to above Notes

*c) Endangered Species:*The species whose number is diminishing to a level that they might face extinction in near future are called endangered species.

Extinct Species: The species whose numbers are nil (zero), because of changes in their habitat and other calamities.

d) *Flora*: The plants that are found in a particular area are called flora for example, sal, teak, jamun etc.

e) Fauna: The animals that are found in a particular area are called fauna. For example chinkara, cheetal, leopard etc.

Q3) Discuss the effects of deforestation on the following:

a) *WildAnimals*: Deforestation leads to the change in the natural climate or habitat of the animals, so the species may become endangered and ultimately extinct in the near future.

b) *Environment*: Deforestation increases the temperature and pollution level on the earth. It decreases the level of oxygen in the atmosphere and ground water level is

also lowered. The fertility of the soil will decrease and therefore the chances of natural calamities increase.

c) *Village (Rural areas)*: Decline in rainfall causes decrease in soil fertility which can lead to lower agricultural production of crops in villages. The natural calamities like flood are also the effects of deforestation which adversely affect the villages.

d) *Cities (Urban areas)*: Deforestation leads to global warming as carbon dioxide traps the heat of sun rays.With continuous global warming many glaciers may melt leading to drowning of many coastal cities.

e) *Earth*: Deforestation leads to soil erosion, change in the physical properties of the soil, removal of humus layer by which the hard and rocky layer exposes. All these ultimately convert the fertile land into desert.

f) *The Next Generation:*Deforestation shows the ugliest face to the survival of next generation with problems at every step in their survival. Next generations may have to face unusual weather changes. Health of future generations may be badly hit due higher pollution levels caused by deforestation. Deforestation may also lead to food scarcity for future generation.

Q4) What will happen if

a)If we go on cutting trees, then:

1. Survival of the mankind will face a threat, because of low oxygen concentration.
2. We will have to face high temperature and pollution level.
3. Natural calamities will occur. ,
4. The water cycle will be disturbed.

b)The habitat of an animal is disturbed.

1. The animals will lose their natural habitat and ultimately will come at the periphery to become endangered
2. The survival of animal will be difficult, because of the drought and the rise in temperature.

c)The top layer of soil is exposed

i) The exposed top layer looses all its nutrients.

ii) Decrease in the water holding capacity of the soil.

iii) Vegetation will go off from the field and desertification will be the result.

Q5) Answer in brief:

1. *Why should we conserve biodiversity?*
    a. Biodiversity refers to the variety of life existing on earth, their inter relationships and their relationship with the environment. If we do not conserve biodiversity ,the food chain will get disturbed and the whole ecosystem will be affected.
2. *Protected forests are also not completely safe for wild animals. Why?*
    a. Protected forests are also not completely safe for the wild animals because poaching or capturing of the animals is easy for the people living in the neighbourhood.
3. *Some tribals depend on the jungle. How?*
    a. Tribals are dependent on jungles for the fulfillment of their daily needs of life. They feed themselves from the different types of vegetation found in jungles and by hunting the wild animals of the jungle.
4. *What are the causes and consequences of deforestation?*
    Refer to Notes.
5. *What is Red Data Book?*
    Refer to Notes
6. *What do you understand by the term migration?*
    Refer to Notes
7. *In order to meet the ever-increasing demand in factories and for shelter, trees are being continually cut. Is it justified to cut tree for such projects? Discuss and prepare a brief report.*
    a. It is not at all justified to cut trees for just to fulfill our demand, because cutting of trees has more disastrous effect than the benefit we will get from cutting those. (students should elaborate and prepare a brief report as asked in the question based on their understanding of the above notes)
8. *How can you contribute to the maintenance of green wealth of your locality? Make a list of actions to be taken by you.*
    a. To maintain the green wealth in my locality, the different actions that can be takentaken are:
        i. Not to allow anybody to cut any trees

ii. Always try to plant saplings in my area
iii. Never neglect the watering of plants
iv. Always trimming the plants time to time for their better growth.

9. *Explain how deforestation leads to reduced rainfall.*
   a. Deforestation leads to reduced rainfall because when the plants/trees transpire, then only the ground water turns into water vapour and goes upward and makes the clouds which are the basic reason for rainfall

10. *Find out the information about national parks in your state. Identify and show their location on the outline map of India.*
   a. Dachigam National Park and Kishtawar High Altitude National Park.

11. *Why should paper be saved? Prepare a list of ways by which you can save paper?*
   a. Paper should be saved for the following reasons:
      a) A large number of trees can be saved by saving paper this can check deforestation.
      b) Saving paper also saves energy and water needed for manufacturing paper.
      c) Amount of harmful chemicals used in paper making will be reduced by saving paper. The ways to save paper are:
      1) Economical use of paper.
      2) Recycling of paper should be done.
      3) Paper should not be burnt.

12. *Complete the word puzzle***:**
Do it yourself